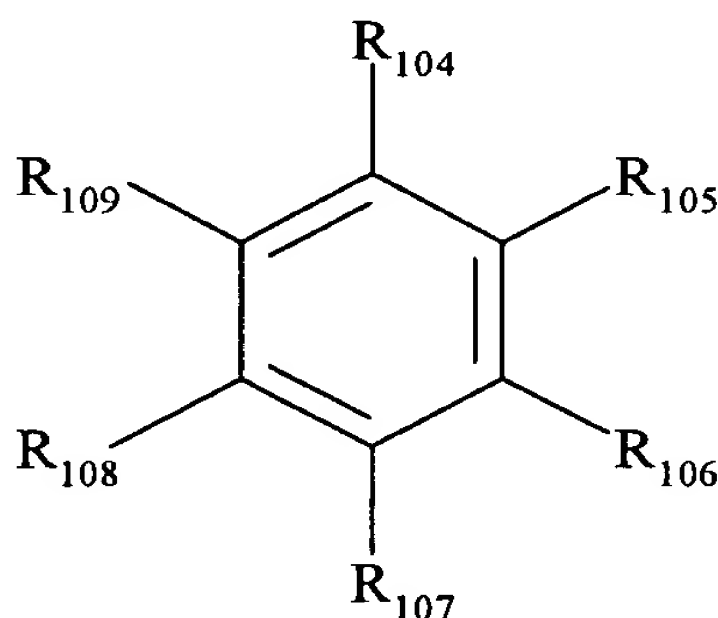


Amendments to the Claims:

Listing of Claims:

1. (Currently Amended) A method for inhibiting the polymer growth of living vinyl aromatic polymer previously formed in the presence of a nitroxyl inhibitor in admixture with ~~ethylenically unsaturated monomers~~ vinyl aromatic monomer, comprising adding to said mixture ~~an effective~~ a living polymer growth inhibiting amount of at least one inhibitor that is a hydrogen donor ~~or electron acceptor~~ selected from the group consisting of inhibitors of the structure



wherein

R₁₀₄, R₁₀₅, R₁₀₆, R₁₀₇, R₁₀₈, and R₁₀₉ are independently selected from the group consisting of hydrogen, alkyl, aryl, cycloalkyl, heterocyclic, substituted alkyl, substituted aryl, OR₁₁₀, NR₁₁₀, R₁₁₁, SR₁₁₀, NO₂, NO, CN, COR₁₁₂, and halogen, and/or any two adjacent groups can be taken together to form ring structure(s) of five to seven members, provided that at least one of R₁₀₄, R₁₀₅, R₁₀₆, R₁₀₇, R₁₀₈, and R₁₀₉ is OH or NHR₁₁₀ and at least one of R₁₀₄, R₁₀₅, R₁₀₆, R₁₀₇, R₁₀₈, and R₁₀₉ is NO₂;

Appl. No. 09/580,343
Amdt. dated April 5, 2004
Reply to Office Action of November 3, 2003

R₁₁₀ and R₁₁₁ are independently selected from the group consisting of hydrogen, alkyl, aryl, benzyl, cyclic, heterocyclic, substituted alkyl or aryl, or R₁₁₀ and R₁₁₁ can be taken together to form a ring structure of five to seven members;

R₁₁₂ is R₁₀₂, OR₁₀₂, or NR₁₀₂R₁₀₃; and

R₁₀₂ and R₁₀₃ are independently selected from the group consisting of hydrogen, alkyl, aryl, benzyl, cyclic, heterocyclic, and substituted alkyl or aryl where the substituents are C, O, N, S, or P, or R₁₀₂ and R₁₀₃ can be taken together to form a ring structure of five to seven members.

2. (Canceled)

3. (Canceled)

4. (Withdrawn)

5. (Canceled)

6. (Currently Amended) The method of claim 5 1 wherein R₁₀₄ is OH.

7 - 8 (Withdrawn)

Appl. No. 09/580,343
Amdt. dated April 5, 2004
Reply to Office Action of November 3, 2003

9. (Original) The method of claim 6 wherein at least one of R_{105} and R_{107} is NO_2 .
- 10 - 14 (Withdrawn)
15. (Canceled)
16. (Currently Amended) The method of claim ~~2~~ 1 wherein a transition metal is added.
17. (Original) The method of claim 16 wherein the transition metal is copper.
- 18 - 29 (Withdrawn)
30. (Currently Amended) Method of claim 1 wherein said ~~monomers contain vinyl~~
aromatic monomer contains impurities from ~~the monomer~~ said monomer's production and/or
purification processes.
31. (Currently Amended) Method of claim 1 wherein the mixture comprises polymer
formed during ~~the~~ said vinyl aromatic monomer's production and/or purification processes.
32. (Currently Amended) Method of claim 31 wherein the polymer formed during the
production and/or purification processes is soluble in the vinyl aromatic monomer stream.

33. (Currently Amended) Method of claim 31 wherein the polymer formed during the production and/or purification processes is insoluble in the vinyl aromatic monomer stream.

34. (Currently Amended) Method of claim 1 wherein said ~~monomers are~~ vinyl aromatic monomer is undergoing purification by distillation.

35. (Original) Method of claim 34 wherein the distillation process occurs at pressures less than 760 mm Hg.

36. (Original) Method of claim 34 wherein the distillation process is a continuous process.

37. (Original) Method of claim 34 wherein the equipment in which the distillation process occurs contains polymer.

38. (Currently Amended) Method of claim 37 wherein the polymer was formed during ~~the monomer's~~ production and/or purification processes of vinyl aromatic monomer.

39. (Currently Amended) Method of claim 37 wherein the polymer is not dissolved in the vinyl aromatic monomer stream.

40. (Currently Amended) Method of claim 34 wherein said ~~monomers contain~~ vinyl aromatic monomer contains impurities from ~~the monomer~~ said vinyl aromatic monomer's production and/or purification processes.

41. (Currently Amended) Method of claim 34 wherein the mixture comprises vinyl aromatic polymer formed during the vinyl aromatic monomer's production and/or purification processes.

42. (Currently Amended) Method of claim 41 wherein the vinyl aromatic polymer formed during the vinyl aromatic monomer's production and/or purification processes is soluble in the vinyl aromatic monomer stream.

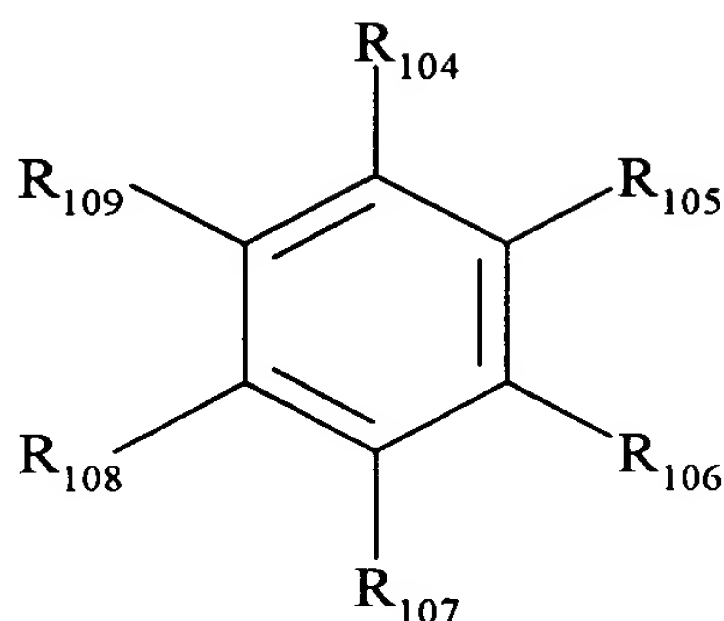
43. (Currently Amended) Method of claim 41 wherein the vinyl aromatic polymer formed during the vinyl aromatic monomer's production and/or purification processes is insoluble in the vinyl aromatic monomer stream.

44. (Currently Amended) A method for inhibiting the polymer growth of living vinyl aromatic polymer previously formed in the presence of a nitroxyl inhibitor in admixture with ~~ethylenically unsaturated monomers~~ vinyl aromatic monomer, comprising adding to said mixture a living polymer growth inhibiting amount of

A) at least one first inhibitor that is a hydrogen donor ~~or electron acceptor~~ selected from the

Appl. No. 09/580,343
Amdt. dated April 5, 2004
Reply to Office Action of November 3, 2003

group consisting of inhibitors of the structure



wherein

R₁₀₄, R₁₀₅, R₁₀₆, R₁₀₇, R₁₀₈, and R₁₀₉ are independently selected from the group consisting of hydrogen, alkyl, aryl, cycloalkyl, heterocyclic, substituted alkyl, substituted aryl, OR₁₁₀, NR₁₁₀R₁₁₁, SR₁₁₀, NO₂, NO, CN, COR₁₁₂, and halogen, and/or any two adjacent groups can be taken together to form ring structure(s) of five to seven members, provided that at least one of R₁₀₄, R₁₀₅, R₁₀₆, R₁₀₇, R₁₀₈, and R₁₀₉ is OH or NHR₁₁₀ and at least one of R₁₀₄, R₁₀₅, R₁₀₆, R₁₀₇, R₁₀₈, and R₁₀₉ is NO₂;

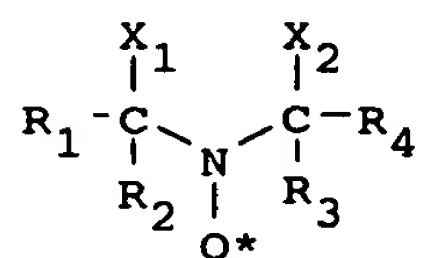
R₁₁₀ and R₁₁₁ are independently selected from the group consisting of hydrogen, alkyl, aryl, benzyl, cyclic, heterocyclic, substituted alkyl or aryl, or R₁₁₀ and R₁₁₁ can be taken together to form a ring structure of five to seven members;

R₁₁₂ is R₁₀₂, OR₁₀₂, or NR₁₀₂R₁₀₃; and

R₁₀₂ and R₁₀₃ are independently selected from the group consisting of hydrogen, alkyl, aryl, benzyl, cyclic, heterocyclic, and substituted alkyl or aryl where the substituents are C, O, N, S, or P, or R₁₀₂ and R₁₀₃ can be taken together to form a ring structure of five to

seven members; and

B) at least one second inhibitor having the following structural formula:



wherein

R₁ and R₄ are independently selected from the group consisting of hydrogen, alkyl, and heteroatom-substituted alkyl;

R₂ and R₃ are independently selected from the group consisting of alkyl and heteroatom-substituted alkyl; and

X₁ and X₂

(1) are independently selected from the group consisting of halogen, cyano, amido, -S-C₆H₅, carbonyl, alkenyl, alkyl of 1 to 15 carbon atoms, COOR₇, -S-COR₇, and -OCOR₇, wherein R₇ is alkyl or aryl, or

(2) taken together, form a ring structure with the nitrogen.

45. (Canceled)

46. (Canceled)

47. (Withdrawn)

Appl. No. 09/580,343
Amdt. dated April 5, 2004
Reply to Office Action of November 3, 2003

48. (Canceled)

49. (Currently Amended) The method of claim ~~48~~ 44 wherein R_{104} is OH.

50 - 51 (Withdrawn)

52. (Original) The method of claim 49 wherein at least one of R_{105} and R_{107} is NO_2 .

53 - 57 (Withdrawn)

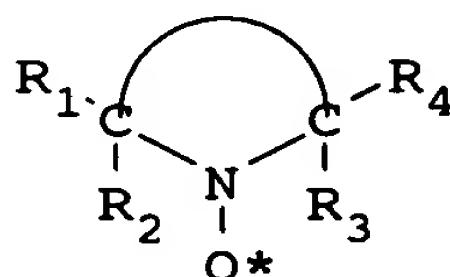
58. (Canceled)

59. (Currently Amended) The method of claim ~~45~~ 44 wherein a transition metal is added.

60. (Original) The method of claim 59 wherein the transition metal is copper.

61 - 72 (Withdrawn)

73. (Original) The method of claim 44 wherein the second inhibitor is of the structure



wherein R₁ and R₄ are independently selected from the group consisting of hydrogen, alkyl, and heteroatom-substituted alkyl and R₂ and R₃ are independently selected from the group consisting of alkyl and heteroatom-substituted alkyl, and the



portion represents the atoms necessary to form a five-, six-, or seven-membered heterocyclic ring.

74. (Withdrawn)

75. (Original) The method of claim 73 wherein the second inhibitor contains one or more nitroxyls selected from the group consisting of:

N,N-di-*tert*-butylnitroxide;

N,N-di-*tert*-amylnitroxide;

N-*tert*-butyl-2-methyl-1-phenyl-propylnitroxide;

N-*tert*-butyl-1-diethylphosphono-2,2-dimethylpropylnitroxide;

Appl. No. 09/580,343
Amdt. dated April 5, 2004
Reply to Office Action of November 3, 2003

2,2,6,6-tetramethyl-piperidinyloxy;
4-amino-2,2,6,6-tetramethyl-piperidinyloxy;
4-hydroxy-2,2,6,6-tetramethyl-piperidinyloxy;
4-oxo-2,2,6,6-tetramethyl-piperidinyloxy;
4-dimethylamino-2,2,6,6-tetramethyl-piperidinyloxy;
4-ethanoyloxy-2,2,6,6-tetramethyl-piperidinyloxy;
2,2,5,5-tetramethylpyrrolidinyloxy;
3-amino-2,2,5,5-tetramethylpyrrolidinyloxy;
2,2,4,4-tetramethyl-1-oxa-3-azacyclopentyl-3-oxy;
2,2,4,4-tetramethyl-1-oxa-3-pyrrolinyl-1-oxy-3-carboxylic acid;
2,2,3,3,5,5,6,6-octamethyl-1,4-diazacyclohexyl-1,4-dioxy;
4-bromo-2,2,6,6-tetramethyl-piperidinyloxy;
4-chloro-2,2,6,6-tetramethyl-piperidinyloxy;
4-iodo-2,2,6,6-tetramethyl-piperidinyloxy;
4-fluoro-2,2,6,6-tetramethyl-piperidinyloxy;
4-cyano-2,2,6,6-tetramethyl-piperidinyloxy;
4-carboxy-2,2,6,6-tetramethyl-piperidinyloxy;
4-carbomethoxy-2,2,6,6-tetramethyl-piperidinyloxy;
4-carbethoxy-2,2,6,6-tetramethyl-piperidinyloxy;
4-cyano-4-hydroxy-2,2,6,6-tetramethyl-piperidinyloxy;
4-methyl-2,2,6,6-tetramethyl-piperidinyloxy;

Appl. No. 09/580,343
Amdt. dated April 5, 2004
Reply to Office Action of November 3, 2003

4-carbethoxy-4-hydroxy-2,2,6,6-tetramethyl-piperidinyloxy;
4-hydroxy-4-(1-hydroxypropyl)-2,2,6,6-tetramethyl-piperidinyloxy;
4-methyl-2,2,6,6-tetramethyl-1,2,5,6-tetrahydropyridine -1-oxyl;
4-carboxy-2,2,6,6-tetramethyl-1,2,5,6-tetrahydropyridine -1-oxyl;
4-carbomethoxy-2,2,6,6-tetramethyl-1,2,5,6-tetrahydropyridine -1-oxyl;
4-carbethoxy-2,2,6,6-tetramethyl-1,2,5,6-tetrahydropyridine -1-oxyl;
4-amino-2,2,6,6-tetramethyl-1,2,5,6-tetrahydropyridine -1-oxyl;
4-amido-2,2,6,6-tetramethyl-1,2,5,6-tetrahydropyridine -1-oxyl;
3,4-diketo-2,2,5,5-tetramethylpyrrolidinyloxy;
3-keto-4-oximino-2,2,5,5-tetramethylpyrrolidinyloxy;
3-keto-4-benzylidene-2,2,5,5-tetramethylpyrrolidinyloxy;
3-keto-4,4-dibromo-2,2,5,5-tetramethylpyrrolidinyloxy;
2,2,3,3,5,5-hexamethylpyrrolidinyloxy;
3-carboximido-2,2,5,5-tetramethylpyrrolidinyloxy;
3-oximino-2,2,5,5-tetramethylpyrrolidinyloxy;
3-hydroxy-2,2,5,5-tetramethylpyrrolidinyloxy;
3-cyano-3-hydroxy-2,2,5,5-tetramethylpyrrolidinyloxy;
3-carbomethoxy-3-hydroxy-2,2,5,5-tetramethylpyrrolidinyloxy;
3-carbethoxy-3-hydroxy-2,2,5,5-tetramethylpyrrolidinyloxy;
2,2,5,5-tetramethyl-3-carboxamido-2,5-dihydropyrrole-1-oxyl;
2,2,5,5-tetramethyl-3-amino-2,5-dihydropyrrole-1-oxyl;

Appl. No. 09/580,343
Amdt. dated April 5, 2004
Reply to Office Action of November 3, 2003

2,2,5,5-tetramethyl-3-carbethoxy-2,5-dihydropyrrole-1-oxyl;
2,2,5,5-tetramethyl-3-cyano-2,5-dihydropyrrole-1-oxyl;
bis(1-oxyl-2,2,6,6-tetramethylpiperidin-4-yl)succinate;
bis(1-oxyl-2,2,6,6-tetramethylpiperidin-4-yl)adipate;
bis(1-oxyl-2,2,6,6-tetramethylpiperidin-4-yl)sebacate;
bis(1-oxyl-2,2,6,6-tetramethylpiperidin-4-yl)n-butylmalonate;
bis(1-oxyl-2,2,6,6-tetramethylpiperidin-4-yl)phthalate;
bis(1-oxyl-2,2,6,6-tetramethylpiperidin-4-yl)isophthalate;
bis(1-oxyl-2,2,6,6-tetramethylpiperidin-4-yl)terephthalate;
bis(1-oxyl-2,2,6,6-tetramethylpiperidin-4-yl)hexahydroterephthalate;
N,N'-bis(1-oxyl-2,2,6,6-tetramethylpiperidin-4-yl)adipamide;
N-(1-oxyl-2,2,6,6-tetramethylpiperidin-4-yl)-caprolactam;
N-(1-oxyl-2,2,6,6-tetramethylpiperidin-4-yl)-dodecylsuccinimide;
2,4,6-tris-[N-butyl-N-(1-oxyl-2,2,6,6-tetramethylpiperidin-4-yl)]-s-triazine; and
4,4'-ethylenebis(1-oxyl-2,2,6,6-tetramethylpiperazin-3-one).

76. (Currently Amended) Method of claim 44 wherein said ~~monomers contain~~ vinyl aromatic monomer contains impurities from ~~the monomer~~ said monomer's production and/or purification processes.

77. (Currently Amended) Method of claim 44 wherein the mixture comprises polymer formed during ~~the~~ said vinyl monomer's production and/or purification processes.
78. (Currently Amended) Method of claim 77 wherein the polymer formed during the production and/or purification processes is soluble in the vinyl aromatic monomer stream.
79. (Currently Amended) Method of claim 77 wherein the polymer formed during the production and/or purification processes is insoluble in the vinyl aromatic monomer stream.
80. (Currently Amended) Method of claim 44 wherein said ~~monomers are~~ vinyl aromatic monomer is undergoing purification by distillation.
81. (Original) Method of claim 80 wherein the distillation process occurs at pressures less than 760 mm Hg.
82. (Original) Method of claim 80 wherein the distillation process is a continuous process.
83. (Original) Method of claim 80 wherein the equipment in which the distillation process occurs contains polymer.

84. (Currently Amended) Method of claim 83 wherein the polymer was formed during ~~the monomer's~~ production and/or purification processes of vinyl aromatic monomer.

85. (Currently Amended) Method of claim 83 wherein the polymer is not dissolved in the vinyl aromatic monomer stream.

86. (Currently Amended) Method of claim 80 wherein said ~~monomers contain~~ vinyl aromatic monomer contains impurities from ~~the monomer~~ said vinyl aromatic monomer's production and/or purification processes.

87. (Currently Amended) Method of claim 80 wherein the mixture comprises vinyl aromatic polymer formed during the vinyl aromatic monomer's production and/or purification processes.

88. (Currently Amended) Method of claim 87 wherein the vinyl aromatic polymer formed during the vinyl aromatic monomer's production and/or purification processes is soluble in the vinyl aromatic monomer stream.

89. (Currently Amended) Method of claim 87 wherein the vinyl aromatic polymer formed during the vinyl aromatic monomer's production and/or purification processes is insoluble in the vinyl aromatic monomer stream.

Appl. No. 09/580,343
Amdt. dated April 5, 2004
Reply to Office Action of November 3, 2003

90 - 121 (Withdrawn)

122. (New) The method of claim 1 wherein the inhibitor is selected from the group consisting of 2,4-dinitro-6-sec-butylphenol and N-methyl-4-nitroaniline.

123. (New) The method of claim 44 wherein the first inhibitor is selected from the group consisting of 2,4-dinitro-6-sec-butylphenol and N-methyl-4-nitroaniline.